ABSTRACT

The PhD thesis on *„Agrobiological and technological study of Feteasca regala and Riesling Italian in Jidvei wine-growing center - Târnave vineyard"* is the first organized study aiming the improvement of technology of those grapevine varieties. The experiences were made during 2004-2007, some technological aspects requiring to verify the experimental data in 2008 and 2010 years.

Structure. The thesis totals 205 pages and is divided into eight chapters: *General part* (Chapters I-III), which presents the Jidvei wine-growing center as a component of Târnave vineyard, the review of biological, agro-technical and technological research performed on the vine varieties experimented; the *Experimental part* (chapters IV-VIII), which includes the research objectives, the presentation of experimental polygon, the presentation of biological material used, the results regarding the agrobiological and technological characteristics of the vine varieties, the statistical analysis of the experimental data and the improvement of grape-growing technologies.

Chapter I (pages 23 - 41) – The presentation of Jidvei wine-growing center as a Târnave vineyard component. Situated in the basin of Tarnava Mica river, Jidvei is the most important wine-growing center of Târnave vineyard, an area with 2215 Mha vine plantations (2010). Vine plantations are situated on the lands around Jidvei, Cetatea de Balta, Bălcaciu, Tătârlaua and Sânmiclăuş towns.

Ecological framework. The landscape is hilly, has an average altitude of 400-600 m, south-western slopes presentation and 5-20% inclination. Vineyard soils are brown eumezobazic and man-changed soils by terracing and deep plowing. On small areas meet carbonated regosoils.

Climatic factors are suitable for grape-growing: average annual temperature 9.88 °C, real insolation 1348 hours/year, annual rainfall 641.2 mm of which 444.8 mm during the growing

season. Ecological indicators reveal the limited heliothermal resources of the vineyard and the natural potential for white wines production: real heliothermal index (Ihr)= 1.93, hydrothermal coefficient (CH) = 1.41, bioclimatic index (Ibcv)= 5.64, oenoclimatic aptitude index (IAOe) = 4880 and Țârdea index (biological time index) of 10-15.

Chapter II (pages 42 - 49)- The evolution of vine varieties. This chapter presents the evolution of vine assortments, the share of vine varieties in the structure of assortments and the share of vine varieties in the actual assortments of the vineyard. It is also mentioned the importance of the share of Feteasca regala, Sauvignon Blanc, Muscat Ottonel, Traminer roz and Riesling Italian in vineyard plantations.

Chapter III (pages 50 - 72)- The current state of the research on varieties grown in the Jidvei wine-growing center. It is a review of the research on vine varieties in the vineyard, on the stages so far. The main center of research in Tarnave vineyard is Blaj Wine-growing Research Station, where the research on improving vine varieties, upgrading grape-growing technologies and modernization the wine technologies were carried out. The pespectives of Jidvei wine-growing centre are presented there.

Chapter IV (pages 73 -89)- Research objectives and the biological material used. They resulted in the need to promote a modern viticulture in Jidvei wine-growing center. The main objectives of the research were:

- to set the Feteasca regala and Riesling Italian agrobiological behavior in Jidvei wine-growing center ecological conditions, to exploit the biological potential by specific technical solutions.

- to establish the technological value of grapevine varieties, of the fertility and productivity features, watching the evolution of grapes ripening; the quantity and quality of the yield, types of wine which could be obtained;

- to optimize the growing technologies of grapevine varieties studied, by implementation of high trunk trellising forms and the improvement of pruning.

The research was conducted during the years 2004-2009.

The biological material used. There were studied Feteasca regala and Riesling Italian, which are varieties from Tarnave vineyard and Jidvei wine-growing center assortments.

Chapter V (pages 90-101)- Experimental polygon. The research was conducted in Farm 23 of SC Jidvei, P2 plot, with Feteasca regala variety grafted on Kober 5BB rootstock, and P6 plot with Riesling italian variety grafted on SO4 rootstock. Experiences were organized in linear blocks with four variants and 3 repetitions.

Observations and tests carried out:

• bud viability control/loss of buds during the winter;

• the amount of wood removed by pruning;

• the growing of shoots;

• development of phenophases;

• total and exposed leaf surface af the canopy;

• monitoring technological evolution of grapes;

• quantity and quality of grapes;

• establishing the optimum time for harvest, the gluco-acidimetric ratio and types of wines that could be obtained.

Chapter VI (pages 102-169)- The experimental results. It is the largest chapter of the thesis where the research results are presented and analyzed as follows: evolution of climatic factors in relation to biological requirements of the vine, vegetative developing of vine varieties, fertility and productivity of the shoots, the quantity and the quality of grape yields. Experimental data were statistically processed and interpreted.

The training system of the vines was evaluated according to: total leaf surface, exposed leaf surface to direct solar radiation and leaf index. Depending on these parameters was characterized the biological potential of the two varieties. Using as a criteria the needs of 1.0 - 1.2 m^2 exposed leaf area/1 kg grapes, it was concluded that the training system as cordons on high trunk ensures qualitative yields within the 12.2 tons of grapes per hectare.

The growth of varieties has been established according the average and summed length of the shoots, the quantity of wood removed by pruning. Resulted that the short pruning is the optimum way, because lead to a smaller number of shoots per vine, a good distribution of leaves in the canopy and create favorable microclimate conditions for quality of the grapes. The best results on the growing are obtained with moderate bud loads, by 9.9 – 14.8 buds/m^2 for Riesling italian variety and 17.7 - 21.8 buds/m^2 at Fetească regală variety.

Productive potential of varieties was analyzed according to the values of productivity index, the number of grapes on the vine and their weight. Maximum grape yields were obtained with loads of 25.9 buds/m^2 for Feteasca regala variety and 21.07 buds/m^2 for Riesling italian variety, but the quality of grapes expressed by the sugar content of must, was negatively correlated with quantity. For Feteasca regala variety the highest sugar concentrations of 190.82 g/L must were obtained with a minimum load of 17.7 buds/m^2, and for Riesling italian variety 200.0 g/L with loads of 9.9 ochi/m^2. The amplification of bud load with 1 bud/vine diminished sugar content with 1.73 g/L at Feteasca regala variety and 1.5 g/L at Riesling italian variety.

Chapter VII (pages 170 - 178)- Statistical processing and interpretation of experimental results. ANOVA test was used for the analyze of correlations growth - yield and yield amount - sugar accumulation. The results of statistical analysis, expressed by standard deviation values and accuracy of the confidence interval shows the accuracy of experimental results.

Interpretation of experimental data was made by their corroboration with experimental variants. This, to optimize the grape-growing technology in Jidvei center wine-growing center.

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Chapter VIII (pages 179-181)– The improvement of experimented wine-growing technologies. There are presented the technological measures regarding the valuing of biological potential of the experimented grapevine varieties: the training of vines in cordons on trunk of 60-70 cm high; short pruning in cuttings; bud loads of 17-22 buds/m^2 for Feteasca regala variety, and 10-15 buds/m^2 for Riesling italian variety, respectively 170000-220000 buds/ha and 100000-150000 buds/ha, to ensure 12 tons of grapes/ha; harvesting on technologic maturity at gluco-acidimetric ration of 12.99-22.23 for Feteasca regala variety and 14.42-28.04 for Riesling italian variety.

The paper ends with **general conclusions** and **bibliography**.